

IN THE CLAIMS

Please amend claims 51, 53, 55, 58-61, 63-64, 106-108, 110, and 112 as follows below.

Please cancel claims 52, 54, 56, 62, 109, and 111 without prejudice.

Please add new claims 113-118 as follows below.

The following listing of claims replaces all prior versions, and listings, of claims in the application:

Marked Up Listing of Pending Claims:

1 1-50. (Cancelled)

1 51. (Currently Amended) Data [[A data]] signal
2 propagation in an optical network equipment for increased
3 reliability, comprising:
4 a first data signal embodied in a first optical signal
5 on a first optical path in the optical network equipment;
6 the first data signal simultaneously embodied in a
7 second optical signal on a second optical path in the
8 optical network equipment;
9 ~~wherein the first optical signal and the second~~
10 ~~optical signal are substantially similar; and~~
11 wherein the first optical path is different from the
12 second optical path;
13 wherein if the first optical path should fail then the
14 second optical signal on the second optical path can
15 provide continued first data signal propagation in the

16 optical network equipment, or if the second optical path
17 should fail then the first optical signal on the first
18 optical path can provide continued first data signal
19 propagation in the optical network equipment.

1 52. (Cancelled)

1 53. (Currently Amended) The data signal propagation
2 of claim 51 further comprising:

3 the first data signal simultaneously embodied in a
4 third optical signal on a third optical ~~signal~~ path in the
5 optical network equipment;

6 ~~wherein the third optical signal is substantially~~
7 ~~similar to the first and second optical signals; and~~

8 wherein the third optical path differs from the first
9 and second optical paths; and

10 wherein if the first and second optical paths should
11 fail then the third optical signal on the third optical
12 path can provide continued first data signal propagation in
13 the optical network equipment.

1 54. (Cancelled)

1 55. (Currently Amended) The data signal propagation
2 of claim ~~[[53]]~~ 51 further comprising:

3 a ~~[[the]]~~ second data signal embodied in a fourth
4 optical signal on a fourth optical ~~signal~~ path in the

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5 optical network equipment, the second data signal differing
6 from the first data signal;
7 the second data signal simultaneously embodied in a
8 fifth optical signal on a fifth optical path in the optical
9 network equipment;
10 ~~wherein the fourth optical signal is substantially~~
11 ~~similar to the first, second and third optical signals; and~~
12 wherein the fourth optical path differs from the fifth
13 ~~first, second and third optical paths path; and~~
14 wherein if the fourth optical path should fail then
15 the fifth optical signal on the fifth optical path can
16 provide continued second data signal propagation in the
17 optical network equipment, or if the fifth optical path
18 should fail then the fourth optical signal on the fourth
19 optical path can provide continued second data signal
20 propagation in the optical network equipment.

1 56. (Cancelled)

1 57. (Original) The data signal propagation of
2 claim 51 wherein

3 the optical network equipment is an optical bridge, an
4 optical router, an optical cross-connect switch, an optical
5 hub, an optical node, an optical concentrator, or other
6 networking equipment accepting a data signal embodied in an
7 optical signal.

1 58. (Currently Amended) A method of increasing
2 reliability in optical network equipment, the method
3 comprising:
4 converting an input optical signal in the optical
5 domain into an electrical signal in the electrical domain;
6 concurrently converting the electrical signal in the
7 electrical domain into a first optical signal and a second
8 optical signal in the optical domain, ~~the first and second~~
9 ~~optical signals being substantially similar;~~
10 routing the first optical signal and the second
11 optical signal respectively over two differing optical
12 paths in the optical network equipment;
13 similarly processing the first optical signal ~~signals~~
14 and the second optical signal ~~similarly~~ through the optical
15 network equipment to generate a first processed optical
16 signal and a second processed optical signal respectively;
17 and
18 selecting the stronger signal of either the first
19 processed optical signal or the second processed optical
20 signal as the output optical signal of the optical network
21 equipment.

1 59. (Currently Amended) The method of claim 58
2 wherein
3 ~~the converting of the input optical signal in the~~
4 ~~optical domain into the electrical signal in the electrical~~
5 ~~domain and the converting of the electrical signal in the~~

6 electrical domain is simultaneously converted into the
7 first optical signal and the second optical signal in the
8 optical domain ~~are performed substantially at the same time~~
9 by an electrical to optical converter and an optical
10 splitter.

1 60. (Currently Amended) The method of claim 58
2 wherein

3 the optical network equipment is an optical cross-
4 connect switch ~~and the processing of the first and second~~
5 ~~optical signals similarly therein includes routing the~~
6 ~~first and second optical signals respectively over two~~
7 ~~differing optical paths in the optical cross-connect~~
8 ~~switch.~~

1 61. (Currently Amended) The method of claim 58
2 wherein

3 the selecting selects the first processed optical
4 signal as the output optical signal because the second
5 processed optical signal has a weaker signal strength than
6 the first processed optical signal.

1 62. (Cancelled)

1 63. (Currently Amended) The method of claim [[61]]
2 58 wherein

3 the selecting selects the first processed optical
4 signal as the output optical signal because the second
5 processed optical signal is unavailable for selection by
6 the selecting as a result of a failure in an optical path
7 and the processing of the second optical signal failing to
8 generate the second processed optical signal.

1 64. (Currently Amended) The method of claim [[61]]
2 63 wherein

3 the second processed optical signal is unavailable for
4 selection by the selecting as a result of a failed
5 component in the optical path over which the second optical
6 signal is routed in the optical network equipment.

1 65. (Original) The method of claim 58 wherein
2 the selecting of either the first processed optical
3 signal or the second processed optical signal includes
4 converting the first processed optical signal in
5 the optical domain into a first processed electrical
6 signal in the electrical domain,
7 converting the second processed optical signal in
8 the optical domain into a second processed electrical
9 signal in the electrical domain,
10 selecting either the first processed electrical
11 signal or the second processed electrical signal as an
12 output electrical signal, and

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13 converting the output electrical signal in the
14 electrical domain into the output optical signal in
15 the optical domain.

1 66-105. (Cancelled)

1 106. (Currently Amended) The data [[Data]] signal
2 ~~propagation in optical network equipment for increased~~
3 ~~reliability, comprising: of claim 51, wherein~~
4 ~~a data signal embodied in a first optical signal on a~~
5 ~~first optical path in the optical network equipment;~~
6 ~~the data signal embodied in a second optical signal on~~
7 ~~a second optical path in the optical network equipment;~~
8 ~~wherein the first optical signal and the second~~
9 ~~optical signal are substantially similar; and~~
10 ~~wherein the first optical path is different from the~~
11 ~~second optical path; and~~
12 if [[when]] the first optical path fails, or the
13 second optical path fails, or both the first and second
14 optical paths fail, an alarm signal embodied in an
15 electrical signal from the optical network equipment to
16 signal a failure of an optical path.

1 107. (Currently Amended) The data signal
2 propagation of claim 106 wherein
3 if the first optical path should fail,

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4 the alarm signal embodied in the electrical
5 signal from the optical network equipment signals a
6 failure of the first optical path, ~~and~~
7 ~~the second optical path provides continued data~~
8 ~~signal propagation in the optical network equipment.~~

1 108. (Currently Amended) The data signal
2 propagation of claim 106 further comprising:

3 the first data signal simultaneously embodied in a
4 third optical signal on a third optical signal path in the
5 optical network equipment;

6 ~~wherein the third optical signal is substantially~~
7 ~~similar to the first and second optical signals; and~~

8 wherein the third optical path differs from the first
9 and second optical paths; and

10 wherein if both the first and second optical paths
11 should fail,

12 the alarm signal embodied in the electrical
13 signal from the optical network equipment signals a
14 failure of both the first and second optical paths,
15 and

16 the third optical signal on the third optical
17 path can provide continued first data signal
18 propagation in the optical network equipment.

1 109. (Cancelled)

1 110. (Currently Amended) The data signal
2 propagation of claim 108 further comprising:

3 the first data signal simultaneously embodied in a
4 fourth optical signal on a fourth optical signal path in
5 the optical network equipment;
6 ~~wherein the fourth optical signal is substantially~~
7 ~~similar to the first, second and third optical signals; and~~
8 wherein the fourth optical path differs from the
9 first, second and third optical paths; and
10 if the first, second and third optical paths should
11 fail,

12 the alarm signal embodied in the electrical
13 signal from the optical network equipment signals a
14 failure of the first, second and third optical paths,
15 and
16 the fourth optical signal on the fourth optical
17 path can provide continued first data signal
18 propagation in the optical network equipment.

1 111. (Cancelled)

1 112. (Currently Amended) The data signal
2 propagation of claim [[106]] 51 wherein

3 the optical network equipment is an optical bridge, an
4 optical router, an optical cross-connect switch, an optical
5 hub, an optical node, an optical concentrator, or other

6 networking equipment accepting a data signal embodied in an
7 optical signal.

1 113. (New) The data signal propagation of claim
2 51 wherein

3 a portion of the first optical path is in a first
4 optical switch fabric of the optical network equipment, and
5 a portion of the second optical path is in a second
6 optical switch fabric of the optical network equipment.

1 114. (New) A method of data signal propagation in
2 an optical network equipment for increased reliability, the
3 method comprising:

4 simultaneously embodying a plurality of data signals
5 respectively into a first plurality of optical signals and
6 a second plurality of optical signals, each data signal of
7 the plurality of data signals being different;

8 respectively propagating the first plurality of
9 optical signals over a first plurality of optical paths in
10 the optical network equipment;

11 respectively propagating the second plurality of
12 optical signals over a second plurality of optical paths in
13 the optical network equipment, the second plurality of
14 optical paths differing from the first plurality of optical
15 paths;

16 wherein if one of the optical paths in the first
17 plurality of optical paths should fail then one of the
18 second plurality of optical signals on a respective one of

19 the second plurality of optical paths can provide continued
20 data signal propagation in the optical network equipment,
21 and if one of the optical paths in the second plurality of
22 optical paths should fail then one of the first plurality
23 of optical signals on a respective one of the first
24 plurality of optical paths can provide continued data
25 signal propagation in the optical network equipment.

1 115. (New) The method of claim 114, wherein
2 a portion of the first plurality of optical paths are
3 in a first optical switch fabric of the optical network
4 equipment, and
5 a portion of the second plurality of optical paths are
6 in a second optical switch fabric of the optical network
7 equipment.

1 116. (New) The method of claim 114, wherein
2 the optical network equipment is an optical bridge, an
3 optical router, an optical cross-connect switch, an optical
4 hub, an optical node, an optical concentrator, or other
5 networking equipment accepting a data signal embodied in an
6 optical signal.

1 117. (New) The method of claim 114, further
2 comprising:
3 if any optical path fails in the first plurality of
4 optical paths, signaling a failure of an optical path in

5 the first plurality of optical paths by transmitting an
6 alarm signal embodied in an electrical signal out from the
7 optical network equipment;

8 if any optical path fails in the second plurality of
9 optical paths, signaling a failure of an optical path in
10 the second plurality of optical paths by transmitting an
11 alarm signal embodied in an electrical signal out from the
12 optical network equipment; and

13 if optical paths fail in both the first and second
14 plurality of optical paths, signaling a failure of the
15 optical paths in both the first plurality of optical paths
16 and the second plurality of optical paths by transmitting
17 an alarm signal embodied in an electrical signal out from
18 the optical network equipment.

1 118. (New) The method of claim 114, further
2 comprising:

3 if one of the optical paths in the first plurality of
4 optical paths fails, selecting the respective optical
5 signal of the second plurality of optical signals on the
6 respective one of the second plurality of optical paths as
7 an output optical signal for the respective data signal to
8 provide continued data signal propagation in the optical
9 network equipment; and

10 if one of the optical paths in the second plurality of
11 optical paths fails, selecting the respective optical
12 signal of the first plurality of optical signals on the
13 respective one of the first plurality of optical paths as

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- 14 the output optical signal for the respective data signal to
- 15 provide continued data signal propagation in the optical
- 16 network equipment.